MUTATIONS IN THE CATALASE-PEROXIDASE GENE FROM ISONIAZID RESISTANT MYCOBACTERIUM TUBERCULOSIS.

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Tuberculosis, which continues to be an important disease worldwide, has recently seen a resurgence in North America largely due to the AIDS epidemic and the influx of infected immigrants. Dramatic situations have been experienced recently in the U.S.A. with the appearance of several fatal outbreaks of infection by multidrug resistant strains of Mycobacterium tuberculosis such as isoniazid (INH) resistant strains. The gene associated with INH-sensitivity in M. tuberculosis has been identified by Zhang as the katG gene that codes for catalase-peroxidase production. INH-resistance has been correlated with deletion of katG gene from M. tuberculosis chromosome.

For the present study, ten isolates of INH-resistant M. tuberculosis were studied by amplification of a 237 bp of the katG gene by the polymerase chain reaction (PCR). Positive amplification was observed in 9 cases. PCR products were purified for direct DNA sequencing. The DNA sequences showed point mutations, deletions and insertions up to 3 bases. Taken as reference the katG gene of INH-sensitive isolates the phylogenetic distance in 6 cases was small; 3 other isolates were located more distant in the tree. One of the INH-resistant isolates did not amplified the katG gene. The preset study suggests that the katG gene is deleted in 1/10 cases and in 9 cases INH-resistant is associated with mutations, deletions and insertions in the katG gene.

Source: https://www.industrydocuments.ucsf.edu/docs/fhmv0000